

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms.

23. The transition metal compound as claimed in claim 22, wherein the radicals L are identical or different and are each a substituted cyclopentadienyl group.

24. The transition metal compound as claimed in claim 22, wherein the radicals L are linked to one another via a bridge.

25. The transition metal compound as claimed in claim 22, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.

26. The transition metal compound as claimed in claim 22, wherein

M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,

L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are optionally linked to one another via a bridge Z and

Z is CR^2R^3 or SiR^2R^3 or a unit $\text{Si}-(\text{CR}^2\text{R}^3)_x-\text{Si}$ which links two fragments $\text{L}_n\text{MXX}'\text{A-R}_m^1$ with one another, where x is an integer from 0 to 10,

X and X' together form a three-membered to five-membered hydrocarbon chain which can be saturated or unsaturated and are unsubstituted or substituted by one or more C₁-C₂₀-hydrocarbon radicals,

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

27. The transition metal compound as claimed in claim 22, wherein

M is zirconium,

n is equal to 2,

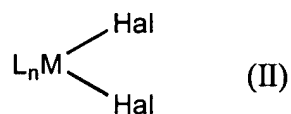
L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³ and

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L,

X and X' together form an unsaturated four-membered hydrocarbon chain whose hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups.

28. A process for preparing the compound as claimed in claim 22,

which comprises reacting a compound of the formula II

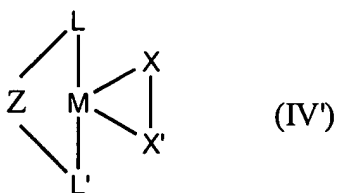


with a compound of the formula III



and reacting the reaction product with a compound of the formula AR_m¹, where L, n, M, X and X' in the formulae II and III are defined for the formula IV and Hal is a halogen atom.

29. A transition metal compound of the formula IV'



where

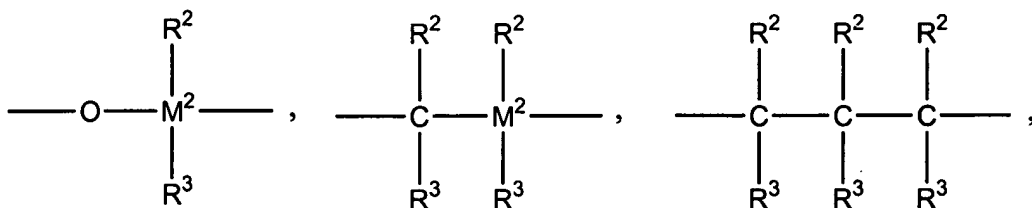
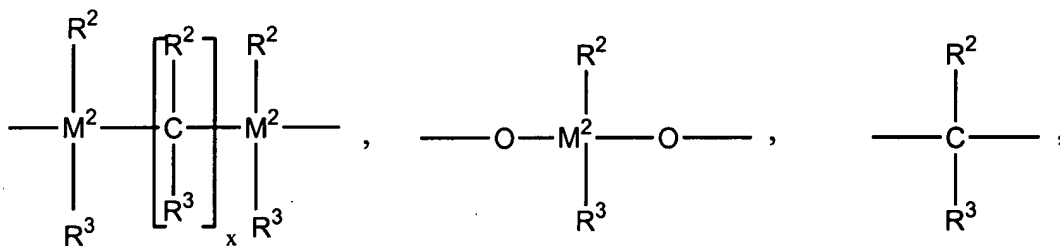
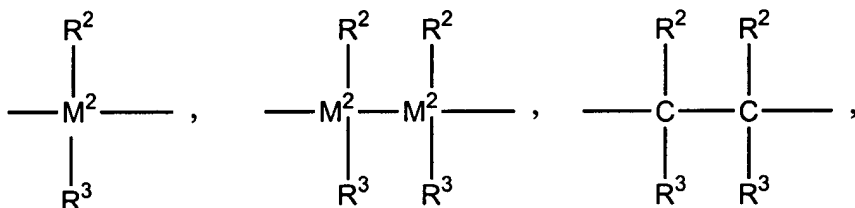
L and L' are identical or different and are each a π ligand or an electron donor,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms,

Z is



=BR₂, -AlR², -Ge-, -O-, -S-, =SO, =SO₂, -NR₂, =CO, =PR² or =P(O)R², where R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁-fluoroalkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group and x is a number from zero to 18, or R² and R³ together with the atoms-connecting them form one or more rings and R² or/and R³ can be bonded to L and M² is silicon, germanium or tin.

30. The transition metal compound as claimed in claim 29, wherein the radicals L are identical or different and are each an unsubstituted or substituted cyclopentadienyl group.

31. The transition metal compound as claimed in claim 29, wherein the radicals L are linked to one another via a bridge.

32. The transition metal compound as claimed in claim 29, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.

33. The transition metal compound as claimed in claim 29, wherein

M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,

L are identical or different and are each a substituted or unsubstituted cyclopentadienyl group, where two radicals L are optionally linked to one another via a bridge Z and

Z is CR^2R^3 or SiR^2R^3 or a unit $\text{Si}-(\text{CR}^2\text{R}^3)_x-\text{Si}$ which links two fragments $\text{L}_n\text{M}'\text{XX}'\text{A}-\text{R}^1_m$ with one another, where x is an integer from 0 to 10.

X and X' together form a three-membered to five-membered hydrocarbon chain which can be saturated or unsaturated and are unsubstituted or substituted by one or more $\text{C}_1\text{-C}_{20}$ -hydrocarbon radicals.

R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a $\text{C}_1\text{-C}_{20}$ -alkyl group, a $\text{C}_1\text{-C}_{10}$ -fluoralkyl group, a $\text{C}_1\text{-C}_{10}$ -alkoxy group, a $\text{C}_6\text{-C}_{14}$ -aryl group, a $\text{C}_6\text{-C}_{10}$ -fluoroaryl group, a $\text{C}_6\text{-C}_{10}$ -aryloxy group, a $\text{C}_2\text{-C}_{10}$ -alkenyl group, a $\text{C}_7\text{-C}_{40}$ -arylalkyl group, a $\text{C}_7\text{-C}_{40}$ -alkylaryl group, a $\text{C}_8\text{-C}_{40}$ -arylalkenyl group, or R^2 and R^3 together with the atoms connected them form one or more rings, and R^2 and R^3 are optionally bonded to L.

34. The transition metal compound as claimed in claim 29, wherein

M is zirconium,

n is 2,

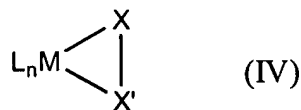
L are identical or different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR^2R^3 or SiR^2R^3 .

R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a $\text{C}_1\text{-C}_{20}$ -alkyl group, a $\text{C}_1\text{-C}_{10}$ -fluoralkyl group, a $\text{C}_1\text{-C}_{10}$ -alkoxy group, a $\text{C}_6\text{-C}_{14}$ -aryl group, a $\text{C}_6\text{-C}_{10}$ -fluoroaryl group, a $\text{C}_6\text{-C}_{10}$ -aryloxy group, a $\text{C}_2\text{-C}_{10}$ -alkenyl group, a $\text{C}_7\text{-C}_{40}$ -arylalkyl group, a $\text{C}_7\text{-C}_{40}$ -

alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

X and X' together form an unsaturated four-membered hydrocarbon chain whose hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups.

35. A transition metal compound of the formula IV



wherein

L are different if n is 2, 3 or 4, and are each a π ligand or electron donor,

n is equal to 1, 2, 3, or 4,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms.

36. The transition metal compound as claimed in claim 35, wherein the radicals L are different and are each an unsubstituted or substituted cyclopentadienyl group.

37. The transition metal compound as claimed in claim 35, wherein the radicals L are linked to one another via a bridge.
38. The transition metal compound as claimed in claim 35, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.
39. The transition metal compound as claimed in claim 35, wherein
M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,
L are different and are each a substituted or unsubstituted cyclopentadienyl group, where two
radicals L are optionally linked to one another via a bridge Z and
Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)_x-Si which links two fragments L_nM'XX'A-R¹_m with
one another, where x is an integer from 0 to 10,
X and X' together form a three-membered to five-membered hydrocarbon chain which can
be saturated or unsaturated and are unsubstituted or substituted by one or more C₁-C₂₀=
hydrocarbon radicals,
R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-
C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a
C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl
group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with
the atoms connected them form one or more rings, and R² and R³ are optionally bonded
to L.

40. The transition metal compound as claimed in claim 35, wherein

M is zirconium,

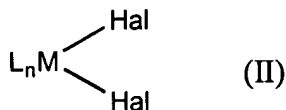
n is 2,

L are different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³ and

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

X and X' together form an unsaturated four-membered hydrocarbon chain whose hydrogen atoms are optionally replaced by C₁-C₂₀-alkyl groups.

41. A process for preparing the compound as claimed in claim 35,
which comprises reacting a compound of the formula II



with a compound of the formula III

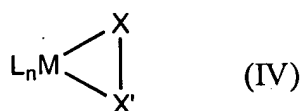


and reacting the reaction product with a compound of the formula AR^1_m , where L, n, M, X and

X' in the formulae II and III are defined for the formula IV,

Hal is a halogen atom.

42. A transition metal compound of the formula IV



wherein

L are identical or different and are each a π ligand or electron donor,

n is equal to 1, 2, 3, or 4,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom, a C_6-C_{14} -aryl group, a C_7-C_{40} -arylalkyl group, a C_7-C_{40} -alkylaryl group or a C_8-C_{40} -arylalkenyl group,

X' or a hydrocarbon group having 1-40 carbon atoms.

43. The transition metal compound as claimed in claim 42, wherein the radicals L are different and are each an unsubstituted or substituted cyclopentadienyl group.
44. The transition metal compound as claimed in claim 42, wherein the radicals L are linked to one another via a bridge.
45. The transition metal compound as claimed in claim 42, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.
46. The transition metal compound as claimed in claim 42, wherein
M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,
L are different and are each a substituted or unsubstituted cyclopentadienyl group, where two
radicals L are optionally linked to one another via a bridge Z and
Z is CR²R³ or SiR²R³ or a unit Si-(CR²R³)_x-Si which links two fragments L_nM'XX'A-R'_m with
one another, where x is an integer from 0 to 10,
X and X' together form a three-membered or five-membered hydrocarbon chain which can
be saturated or unsaturated and are unsubstituted or substituted by one or more C₁-C₂₀-
hydrocarbon radicals,
R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-
C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a
C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl

group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

47. The transition metal compound as claimed in claim 42, wherein

M is zirconium,

n is 2,

L are different and are each a substituted cyclopentadienyl group, where two radicals L are linked to one another via a bridge Z, where Z is CR²R³ or SiR²R³ and

R² and R³ are identical or different and are each a hydrogen atom, a halogen atom, a C₁-C₂₀-alkyl group, a C₁-C₁₀-fluoralkyl group, a C₁-C₁₀-alkoxy group, a C₆-C₁₄-aryl group, a C₆-C₁₀-fluoroaryl group, a C₆-C₁₀-aryloxy group, a C₂-C₁₀-alkenyl group, a C₇-C₄₀-arylalkyl group, a C₇-C₄₀-alkylaryl group, a C₈-C₄₀-arylalkenyl group, or R² and R³ together with the atoms connected them form one or more rings, and R² and R³ are optionally bonded to L.

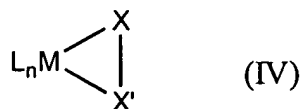
48. A compound selected from the group consisting of

Bis (methylcyclopentadienyl) ZrCH₂CHCHCH₂;
Bis (n-butyl-cyclopentadienyl) ZrCH₂CHCHCH₂;
Bisindenyl ZrCH₂CHCHCH₂;
(tert. butylamido) dimethyl (tetramethyl- η^5 -cyclopentadienyl) si-
lan-Zr⁺CH₂CHCHCH₂;
Bis (2-methylbenzoindenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbis (2-methyl-indenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbisindenyl Zr⁺CH₂CHCHCH₂;
Dimethylsilandiylbis (2-methylbenzoindenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiyl (2-methylbenzoindenyl) (2-methyl-indenyl)
ZrCH₂CHCHCH₂;
Dimethylsilandiyl (2-methylbenzoindenyl) (2-methyl-4-phenylindenyl)
ZrCH₂CHCHCH₂ ;
Dimethylsilandiyl (2-methylindenyl) (4-phenylindenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbis (2-methyl-4-phenyl-indenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbis (2-methyl-4, 6-diisopropyl-indenyl) Zr⁺
CH₂CHCHCH₂;
Dimethylsilaniylbis (2-methyl-4-naphtyl-indenyl) ZrCH₂CHCHCH₂;
Isopropyliden (cyclopentadienyl) (fluorenyl) ZrCH₂CHCHCH₂;
Isopropyliden (cyclopentadienyl) (indenyl) ZrCH₂CHCHCH₂;
[4- (η^5 -Cyclopentadienyl) -4, 7, 7-trimethyl- (η^5 -4.5.6.7-tetrahydro-
indenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbis (2-methyl-indenyl) ZrOCH₂CH₂CH₂;
Dimethylsilandiylbisindenyl ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis (2-methylbenzoindenyl) ZrOCH₂CH₂CH₂;
Dimethylsilandiyl (2-methylbenzoindenyl) (2-methyl-indenyl)
ZrOCH₂CH₂CH₂;
Dimethylsilandiyl (2-methylbenzoindenyl) (2-methyl-4-phenylindenyl)
ZrOCH₂CH₂CH₂;
Dimethylsilandiyl (2-methylindenyl) (4-phenylindenyl) ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis (2-methyl-4-phenyl-indenyl) ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis (2-methyl-4, 6-diisopropyl-indenyl)
ZrOCH₂CH₂CH₂;
Dimethylsilandiylbis (2-methyl-indenyl) ZrCH₂C (CH₃) C (CH₃) CH₂;
Dimethylsilandiylbisindenyl ZrCH₂C (CH₃) C (CH₃) CH₂;
Dimethylsilandiylbis (2-methylbenzoindenyl) Zr⁺CH₂C (CH₃) C (CH₃) CH₂;
Dimethylsilandiyl (2-methylbenzoindenyl) (2-methyl-indenyl)
ZrCH₂C (CH₃) C (CH₃) CH₂;
Dimethylsilandiyl (2-methylbenzoindenyl) (2-methyl-4-phenylindenyl)
ZrCH₂C (CH₃) C (CH₃) CH₂;

Dimethylsilandiyl(2-methylindenyl)(4-phenylindenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiylbis(2-methyl-4-phenyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilandiylbis(2-methyl-4,6-diisopropyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Dimethylsilaniylbis(2-methyl-4-naphtyl-indenyl)
ZrCH₂C(CH₃)C(CH₃)CH₂;
Methylphenylmethylen-(fluorenyl)(cyclopentadienyl)ZrCH₂CHCHCH₂;
Diphenylmethylen-(fluorenyl)(cyclopentadienyl)ZrCH₂CHCHCH₂;
Isopropyliden-(3-methylcyclopentadienyl)(fluorenyl)
ZrCH₂CHCHCH₂B⁻(C₆F₅)₃;
Dimethylsilandiyl-(3-tert.-Butylcyclopentadienyl)(fluorenyl)
ZrCH₂CHCHCH₂;
Diphenylsilandiyl-(3-(trimethylsilyl)cyclopentadienyl)(fluorenyl)
ZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(e-methyl-indenyl)ZrCH₂CHCHCH₂;
PhenylmethyilsilandiylbisindenylZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(2-methyl-4,5-benzoindenyl)ZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(2-methyl-4,5-benzoindenyl)(2-methyl
-indenyl)ZrCH₂CHCHCH₂;
Phenylmethyilsilandiyl(2-methyl-4,5-benzoindenyl)(2-methyl-4
-phenylindenyl)ZrCH₂CHCHCH₂;
Phenylmethyilsilaniyl(2-methylindenyl)(4-phenylindenyl)
ZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(2-methyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(2-ethyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(2-methyl-4,6-diisopropyl-indenyl)
ZrCH₂CHCHCH₂;
Phenylmethyilsilandiylbis(2-methyl-4-naphtyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-indenyl)ZrCH₂CHCHCH₂;
EthylenbisindenylZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4,5-benzoindenyl)ZrCH₂CHCHCH₂;
Ethylen(2-methyl-4,5-benzoindenyl)(2-methyl-indenyl)ZrCH₂CHCHCH₂;
Ethylen(2-methyl-4,5-benzoindenyl)(2-methyl-4-phenylindenyl)
ZrCH₂CHCHCH₂;
Ethylen(2-methylindenyl)(4-phenylindenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4,5-benzoindenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4-phenyl-indenyl)ZrCH₂CHCHCH₂;
Ethylenbis(2-methyl-4,6-diisopropyl-indenyl)ZrCH₂CHCHCH₂;

Ethylenbis (2-methyl-4-naphtyl-indenyl) ZrCH₂CHCHCH₂;
Ethylenbis (2-ethyl-4-phenyl-indenyl) ZrCH₂CHCHCH₂;
Ethylenbis (2-ethyl-4,6-diisopropyl-indenyl) ZrCH₂CHCHCH₂;
Ethylenbis (2-ethyl-4-naphtyl-indenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbis (2-ethyl-4-phenyl-indenyl) ZrCH₂CHCHCH₂;
Dimethylsilandiylbis (2,3,5-trimethylcyclopentadienyl)
ZrCH₂CHCHCH₂;
1,6-{Bis [methylsilyl-bis (2-methyl-4-phenyl-indenyl) Zr+CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } hexan;
1,6-{Bis [methylsilyl-bis (2-ethyl-4-phenyl-indenyl)
Zr+CH₂CHCHCH₂B⁻ (C₆F₅)₃] } hexan;
1,6-{Bis [methylsilyl-bis (2-methyl-4-naphtyl-indenyl) Zr+CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } hexan;
1,6-{Bis [methylsilyl-bis (2-methyl-4,5-benzoindenyl) Zr⁺CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } hexan;
1,6-{Bis [methylsilyl- (2-methyl-4-phenyl-indenyl) (2-methyl-inde-
nyl) Zr⁺CH₂CHCHCH₂B⁻ (C₆F₅)₃] } hexan;
1,2-{Bis [methylsilyl-bis (2-methyl-4-phenyl-indenyl) Zr⁺CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } ethan;
1,2-{Bis [methylsilyl-bis (2-ethyl-4-phenyl-indenyl) Zr⁺CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } ethan;
1,2-{Bis [methylsilyl-bis (2-methyl-4-naphtyl-indenyl) Zr⁺CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } ethan;
1,2-{Bis [methylsilyl-bis (2-methyl-4,5-benzoindenyl) Zr⁺CH₂CHCHCH₂
B⁻ (C₆F₅)₃] } ethan; and
1,2-{Bis [methylsilyl- (2-methyl-4-phenyl-indenyl) (2-methyl-inde-
nyl) Zr⁺CH₂CHCHCH₂B⁻ (C₆F₅)₃] } ethan.

49. A transition metal compound of the formula IV



wherein

L are identical or different and are each a π ligand or electron donor,

n is equal to 1, 2, 3, or 4,

M is a metal atom of group IIIb, IVb, Vb or VIb of the Periodic Table of the Elements,

X is a heteroatom or a hydrocarbon group having 1-40 carbon atoms,

X' is a hydrocarbon group having 1-40 carbon atoms,

with the proviso that at least on L is a substituted or unsubstituted indenyl.

50. The transition metal compound as claimed in claim 49, wherein the radicals L are linked to one another via a bridge.

51. The transition metal compound as claimed in claim 49, wherein n is 2 when M is a metal atom of group IVb of the Periodic Table of the Elements.

52. The transition metal compound as claimed in claim 49, wherein

M is a metal atom of group IVb of the Periodic Table of the Elements, n is equal to 2,
where two radicals L are optionally linked to one another via a bridge Z and

Z is CR^2R^3 or SiR^2R^3 or a unit $\text{Si}-(\text{CR}^2\text{R}^3)_x-\text{Si}$ which links two fragments $\text{L}_n\text{M}'\text{XX}'\text{A}-\text{R}^1_m$ with one another, where x is an integer from 0 to 10,

R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a $\text{C}_1\text{-C}_{20}$ -alkyl group, a $\text{C}_1\text{-C}_{10}$ -fluoralkyl group, a $\text{C}_1\text{-C}_{10}$ -alkoxy group, a $\text{C}_6\text{-C}_{14}$ -aryl group, a $\text{C}_6\text{-C}_{10}$ -fluoroaryl group, a $\text{C}_6\text{-C}_{10}$ -aryloxy group, a $\text{C}_2\text{-C}_{10}$ -alkenyl group, a $\text{C}_7\text{-C}_{40}$ -arylalkyl group, a $\text{C}_7\text{-C}_{40}$ -alkylaryl group, a $\text{C}_8\text{-C}_{40}$ -arylalkenyl group, or R^2 and R^3 together with the atoms connected them form one or more rings, and R^2 and R^3 are optionally bonded to L.

53. The transition metal compound as claimed in claim 49, wherein

M is zirconium,

n is 2,

where two radicals L are linked to one another via a bridge Z, wherein

Z is CR^2R^3 or SiR^2R^3 and

R^2 and R^3 are identical or different and are each a hydrogen atom, a halogen atom, a $\text{C}_1\text{-C}_{20}$ -alkyl group, a $\text{C}_1\text{-C}_{10}$ -fluoralkyl group, a $\text{C}_1\text{-C}_{10}$ -alkoxy group, a $\text{C}_6\text{-C}_{14}$ -aryl group, a $\text{C}_6\text{-C}_{10}$ -fluoroaryl group, a $\text{C}_6\text{-C}_{10}$ -aryloxy group, a $\text{C}_2\text{-C}_{10}$ -alkenyl group, a $\text{C}_7\text{-C}_{40}$ -arylalkyl group, a $\text{C}_7\text{-C}_{40}$ -alkylaryl group, a $\text{C}_8\text{-C}_{40}$ -arylalkenyl group, or R^2 and R^3 together with the atoms connected them form one or more rings, and R^2 and R^3 are optionally bonded to L. - -